

## Unit 9 Day 2

p 136-137: 27-32, 39-42 (all)

$$\begin{aligned} (27) \sqrt{3z+7} &= 3z+5 \\ (\sqrt{3z+7})^2 &= (3z+5)^2 \\ 3z+7 &= 9z^2+30z+25 \\ 9z^2+27z+18 &= 0 \\ 9(z^2+3z+2) &= 0 \\ 9(z+2)(z+1) &= 0 \\ z+2=0 & \quad | \quad z+1=0 \\ \cancel{z=-2} & \quad | \quad z=-1 \end{aligned}$$

$$\begin{aligned} (3z+5) &\geq 0 \\ 3z &\geq -5 \\ z &\geq \frac{-5}{3} \\ z &\geq -1\frac{2}{3} \end{aligned} \quad \{ -1 \}$$

$$\begin{aligned} (28) \sqrt{4r+13} &= 2r-1 \\ (\sqrt{4r+13})^2 &= (2r-1)^2 \\ 4r+13 &= 4r^2-4r+1 \\ 4r^2-8r-12 &= 0 \\ 4(r^2-2r-3) &= 0 \\ 4(r-3)(r+1) &= 0 \\ r-3=0 & \quad | \quad r+1=0 \\ r=3 & \quad | \quad \cancel{r=-1} \end{aligned}$$

$$\begin{aligned} 2r-1 &\geq 0 \\ 2r &\geq 1 \\ r &\geq \frac{1}{2} \end{aligned} \quad \{ 3 \}$$

$$\begin{aligned} (29) \sqrt{4x} - x + 3 &= 0 \\ \sqrt{4x} &= x-3 \\ (\sqrt{4x})^2 &= (x-3)^2 \\ 4x &= x^2-6x+9 \\ x^2-10x+9 &= 0 \\ (x-9)(x-1) &= 0 \\ x-9=0 & \quad | \quad x-1=0 \\ x=9 & \quad | \quad \cancel{x=1} \end{aligned}$$

$$\begin{aligned} x-3 &\geq 0 \\ x &\geq 3 \end{aligned} \quad \{ 9 \}$$

(31) The student did not use the distributive property (FOIL) to square  $3z+7$

$$\begin{aligned} (30) \sqrt{2t} - t + 4 &= 0 \\ \sqrt{2t} &= t-4 \\ (\sqrt{2t})^2 &= (t-4)^2 \\ 2t &= t^2-8t+16 \\ t^2-10t+16 &= 0 \\ (t-8)(t-2) &= 0 \\ t-8=0 & \quad | \quad t-2=0 \\ t=8 & \quad | \quad \cancel{t=2} \end{aligned}$$

$$\begin{aligned} t-4 &\geq 0 \\ t &\geq 4 \end{aligned} \quad \{ 8 \}$$

(32) The student should isolate one of the radicals by moving  $-\sqrt{3x}$  to the right.

$$\begin{aligned} (39) \sqrt[3]{4n+3} &= \sqrt[3]{2n-1} \\ (\sqrt[3]{4n+3})^3 &= (\sqrt[3]{2n-1})^3 \\ 4n+3 &= 2n-1 \\ 2n &= -4 \\ n &= -2 \end{aligned}$$

$$\begin{aligned} (40) \sqrt[3]{2z} &= \sqrt[3]{5z+2} \\ (\sqrt[3]{2z})^3 &= (\sqrt[3]{5z+2})^3 \\ 2z &= 5z+2 \\ -2 &= 3z \\ z &= -\frac{2}{3} \end{aligned}$$

$$\begin{aligned} (42) (3t^2+52t)^{1/4} &= 4 \\ (\sqrt[4]{3t^2+52t})^4 &= 4^4 \\ 3t^2+52t &= 256 \\ 3t^2+52t-256 &= 0 \\ (3t+64)(t-4) &= 0 \\ 3t+64=0 & \quad | \quad t-4=0 \\ 3t=-64 & \quad | \quad t=4 \\ t=-\frac{64}{3} & \quad | \end{aligned}$$

$$\left\{ -\frac{64}{3}, 4 \right\}$$

$$\begin{aligned} (41) (z^2+24z)^{1/4} &= 3 \\ (\sqrt[4]{z^2+24z})^4 &= 3^4 \\ z^2+24z &= 81 \\ z^2+24z-81 &= 0 \\ (z+27)(z-3) &= 0 \\ z+27=0 & \quad | \quad z-3=0 \\ z=-27 & \quad | \quad z=3 \end{aligned}$$

$$\{ -27, 3 \}$$